

WHAT IS CLAIMED IS:

1. A color image processing method for converting first color signals containing four or more variables including black to second color signals containing four variables including
5 black, said method comprising the steps of:

obtaining device-independent color signals on color system color coordinates from said first color signals,

determining a black color signal in said second color signals having the identical or virtually identical density
10 as the black color signal in said first color signals, and

determining the remaining three variable color signals in said second color signals from the black color signal and the device-independent color signals in said second color signals so that colorimetric consistency of the three variable
15 color signals may be obtained.

2. The color image processing method according to claim 1, further comprising the step of:

setting the color signals other than black in said second
20 color signals to zero, in case the color signals other than black in said first color signals are zero.

3. The color image processing method according to claim 1, wherein

25 the color signals other than black in said first color

signals and in said second color signals are yellow, magenta, and cyan.

4. The color image processing method according to claim 1,
5 wherein

the device-independent color signals on said color system color coordinates are L^*a^*b color signals.

5. The color image processing method according to claim 1,
10 wherein

the step for determining a black color signal in said second color signals having the identical or virtually identical density as the black color signal in said first color signals is configured by a lookup table.

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6. The color image processing method according to claim 1, wherein

a function showing the relationship between said second color signals and the device-independent color signals on color system color coordinates is obtained in advance via a step for
20 determining the remaining three variable color signals in said second color signals from the black color signal and the device-dependent color signals in said second signals so that colorimetric consistency of the three variable color signals
25 may be obtained, and

said function is solved by using as an input the black color signal and the device-dependent color signals in said second signals, in order to determine the remaining three variable color signals in said second color signals.

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7. A color image processor for converting first color signals containing four or more variables including black to second color signals containing four variables including black, said processor comprising:

10 means for obtaining device-independent color signals on color system color coordinates from said first color signals,

means for determining a black color signal in said second color signals having the identical or virtually identical density as the black color signal in said first color signals,

15 and

means for determining the remaining three variable color signals in said second color signals from the black color signal and the device-independent color signals in said second color signals so that colorimetric consistency of the three variable color signals may be obtained.

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8. The color image processor according to claim 7, wherein said color image processor comprises means for setting the color signals other than black in said second color signals to zero, in case the color signals other than black in said

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first color signals are zero.

9. The color image processor according to claim 7, wherein
the color signals other than black in said first color
5 signals and in said second color signals are yellow, magenta,
and cyan.

10. The color image processor according to claim 7, wherein
the device-independent color signals on said color
10 system color coordinates are L*a*b color signals.

11. The color image processor according to claim 7, wherein
the step for determining a black color signal in said
second color signals having the identical or virtually
15 identical density as the black color signal in said first color
signals is configured by a lookup table.

12. The color image processor according to claim 7, wherein
a function showing the relationship between said second
20 color signals and the device-independent color signals on color
system color coordinates is obtained in advance via means for
determining the remaining three variable color signals in said
second color signals from the black color signal and the
device-dependent color signals in said second signals so that
25 colorimetric consistency of the three variable color signals

may be obtained, and

said function is solved by using as an input the black color signal and the device-dependent color signals in said second signals, in order to determine the remaining three
5 variable color signals in said second color signals.

13. The color image processor, wherein

each means of said color image processor according to claim 7 is configured by a 4-or-more-input 4-output color
10 converter that inputs color signals containing four or more variables in said first color signals and outputs four variable color signals in said second color signals.

14. The color image processor according to claim 13, wherein

15 said 4-or-more-input 4-output color converter is configured by a direct lookup table.

15. The color image processor comprising:

each means of the color image processor according to
20 claim 7 is configured by

a 4-or-more-input 3-output color converter that inputs color signals containing four or more variables in said first color signals and outputs three variable color signals other than black out of the four variable color signals in said second
25 color signals, and

a 1-input 1-output color converter that inputs the black color signal in said first color signals and outputs the black color signal in said second color signals.

- 5 16. The color image processor according to claim 15, wherein
said 4-or-more-input 3-output color converter is
configured by a direct lookup table, and
said 1-input 1-output color converter is configured by
a lookup table.

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